

Product

A fast and scalable process to generate human motor neurons

Value Propositions

- ▶ Patient-specific, fast, and scalable production of pure and functional human motor neurons.

Market

- ▶ Drug development tool
- ▶ Determine conditions that affect motor neurons
- ▶ Screen compounds to treat MNDs

Intellectual Property

- ▶ PCT stage application: [WO2021189043](#) - A fast and scalable mammalian motor neuron differentiation system

Publication

- ▶ [Hudish et al](#), Modeling Hypoxia-Induced Neuropathies Using a Fast and Scalable Human Motor Neuron Differentiation System

Status

- ▶ Demonstrated scalable production of functionality confirmed motor neurons
- ▶ Available for evaluation, licensing and partnering opportunities

Contact

Aoife Cullen
aoife.cullen@cuanschutz.edu

303-724-0220
cuanschutz.edu/cu-innovations

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Human motor neuron disease model

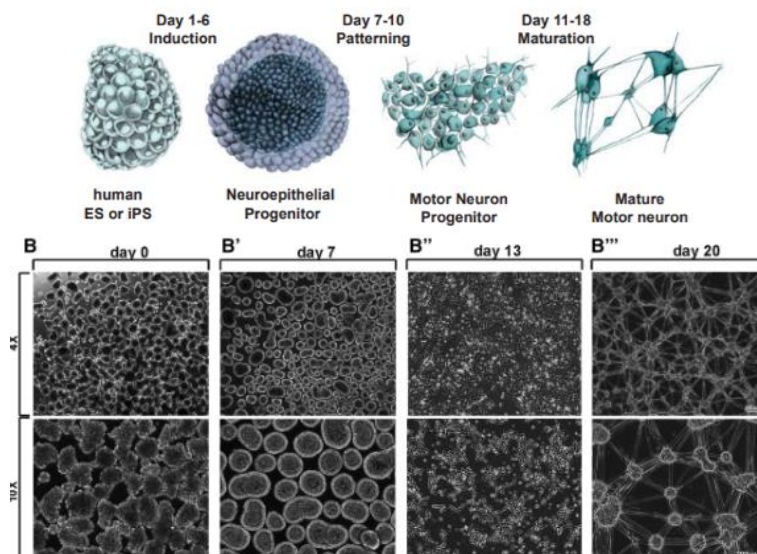
Human motor neuron diseases are irreversible and devastating diseases for which there are no curative treatments. Animal models lack the genotypic and phenotypic features seen in human motor neuron diseases, so human-derived motor neuron models are of high interest. However, current protocols for human models require long maturation times and generate heterogeneous cell populations. This limits both experimental size and data accuracy. To date, the lack of a rapid, scalable and functional *in vitro* human motor neuron model is a critical barrier in drug testing and development. This system enabling **fast** and **scalable** production of motor neurons enables the scaling necessary for large experiments, unbiased genetic screens, and cell replacement therapies.

Functional human-derived motor neurons

This proprietary process produces **large** numbers and **pure** populations of functional motor neuron cells by reprogramming human induced pluripotent stem cells. This process better enables the translation of animal studies of motor neurons into the human context, and provides a cheaper, easier method to (a) investigate disease mechanisms; (b) screen new therapies in development; and (c) develop motor neuron cell therapies.

Advantages:

- Scalable and fast: can generate human motor neurons with native-like motor neuron function, including neurite outgrowths in pure populations in 3 weeks;
- High quality **pure** motor neurons: enables generation of reliable data; enhances experiments with effective fractionation of individual neuron components (i.e. cell soma and neurites);
- Novel culture system: can **model a variety of motor neuropathies** (i.e. ALS, diabetic neuropathy, ALS) to understand disease mechanism and **identify therapeutic targets**.



Figures: Representative photos at various stages of the differentiation protocol